CLAIMS

Sub A'

1. A commutator motor comprising:

an iron core having plural slots that are used for coil winding;

a rotation shaft inserted in a center of said iron core

a pair of first and second commutators mounted on said rotation shaft at opposite ends of said iron core;

a first coil wire connected to the first commutator, and wound on bottoms of the slots of said iron core to form an inner coil;

a second coil wire connected to the second commutator, and wound on said inner coil in the slots of said iron core to form an outer coil;

a first terminal that can be connected to a first power source to supply electric power of said first power source to said first coil wire through said first commutator; and

a second terminal that can be connected to a second power source to supply electric power of said second power source to said second coil wire through said second commutator;

wherein a diameter of said second coil wire is smaller than that of said first coil wire.

2. The commutator motor as set forth in claim 1, wherein a winding start position of said second coil wire of said outer coil is displaced at 90 degrees about said iron core with respect to a winding end position of said first coil

wire of said inner coil.

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3. The commutator motor as set forth in claim 1, wherein said first terminal is adapted for use in a DC power source for supplying a large current that works as said first power source, and said second terminal is adapted for use in an AC power source for supplying a small current that works as said second power source, and wherein said inner and outer coils are formed such that a motor output provided by use of said first power source is substantially equivalent to the motor output provided by use of said second power source.

4. The commutator motor as set forth in claim 1, comprising means for cooling said second coil wire, which is disposed at the periphery of said outer coil.